Expert E-SWT

ROLAND 2

Extra-Corporeal *Shock-Waves* Therapy

With the cooperation of Prof. Giorgio Spacca
and Dr. Angelo Cacchio University of L'Aquila
"Physical Therapy Dept."

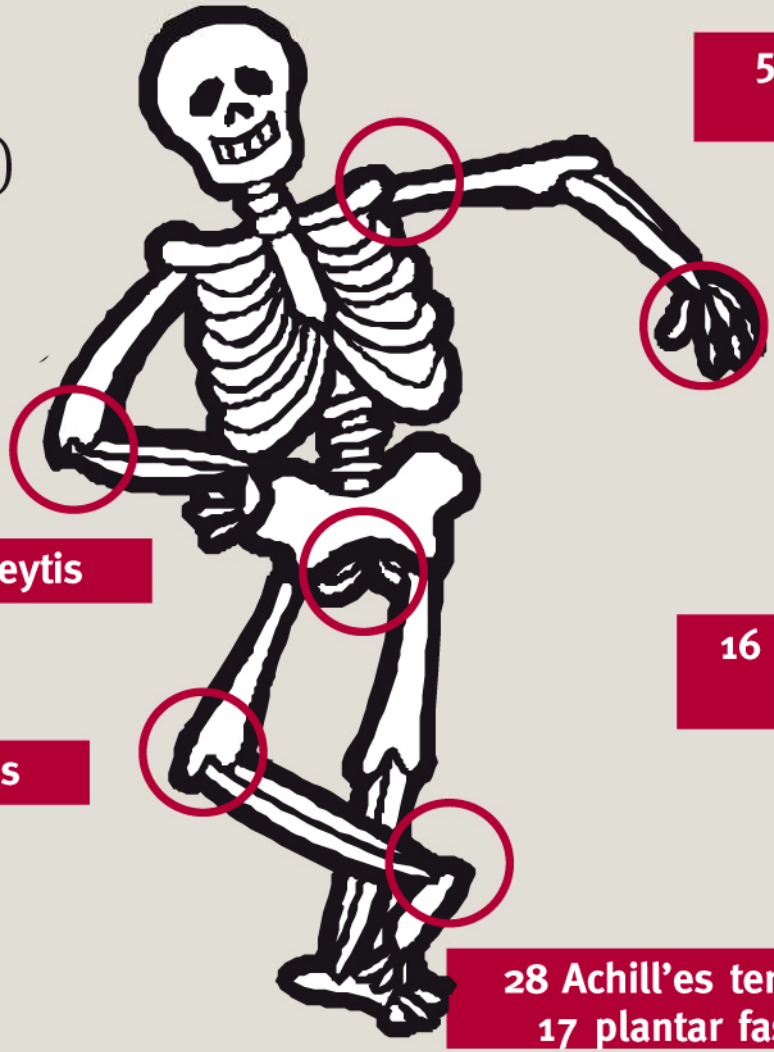
Prof. Combi/Dr. Panico
F.C. Internazionale Football Team - Milano

ELETTRONICA PAGANI

AFFECTED > AREAS

Patients

224 (23 bilateral joins)
247 total
131° 93°



50 calcifications
70 tendinitis

5 rizoarthrosis
11 jerking finger

26 › epicondilytis & epitrocleytis

16 pubalgia
8 SII

16 › tendinitis

28 Achill'es tendinitis
17 plantar fascitis

Targets:

- Increasing of the transcription of anti-inflammatory substances

  Lipocortina, Citochine

  - Lipocortina 1
  - IL-1 Receptor Antagonist

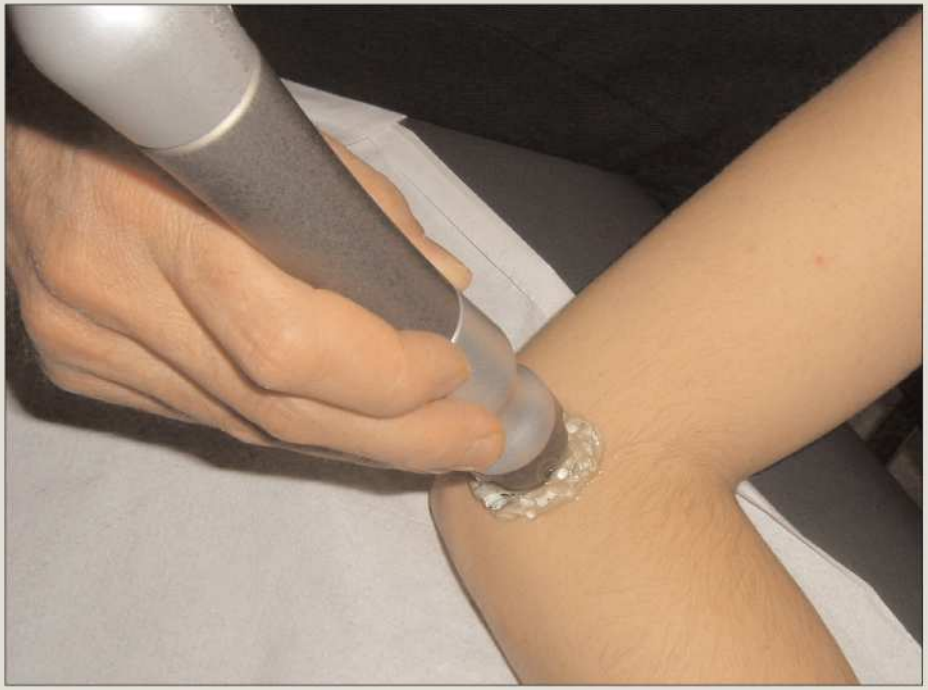
- Decreasing of the transcription of flogosis substances

  Citochine, Adherence particle, Leucotrieni

47% Traumatology into the Sport

Shoulder

Elbow



Knee

Hand

Tendinitis

Recognized by the modality of Bonar which replaced the previous one made by Clancy:

- Tendinosis
- Tendinitis/partial break
- Paratenonitis (or tenosinovitis)
- Paratenonitis with tendinosis

70 Shoulder

- **72% very good**
  (restitutio ad integrum)
- **15% good**
  (improvement of pain and movement)
- **9% not so good**
  (small improvement of pain and movement)
- **4% none** (any improvement)

28 Achille's Tendon

- **70% very good**
  (restitutio ad integrum)
- **17% good**
  (improvement of pain and movement)
- **6,5% not so good**
  (small improvement of pain and movement)
- **6,5% none**
  (any improvement)

17 Plantar Fascitis

- **70% very good**
  (restitutio ad integrum)
- **17% good**
  (improvement of pain and movement)
- **6,5% not so good**
  (small improvement of pain and movement)
- **6,5% none**
  (any improvement)

26 Epicondilytis ed Epitrocleytis

- **61% very good**
  (restitutio ad integrum)
- **24% good**
  (improvement of pain and movement)
- **11% not so good**
  (small improvement of pain and movement)
- **4% none**
  (any improvement)

16 Pubalgia
8 Ischiatic Intersection Syndrome

- **74% very good**
  (restitutio ad integrum)
- **20% good**
  (improvement of pain and movement)
- **4% not so good**
  (small improvement of pain and movement)
- **2% none**
  (any improvement)

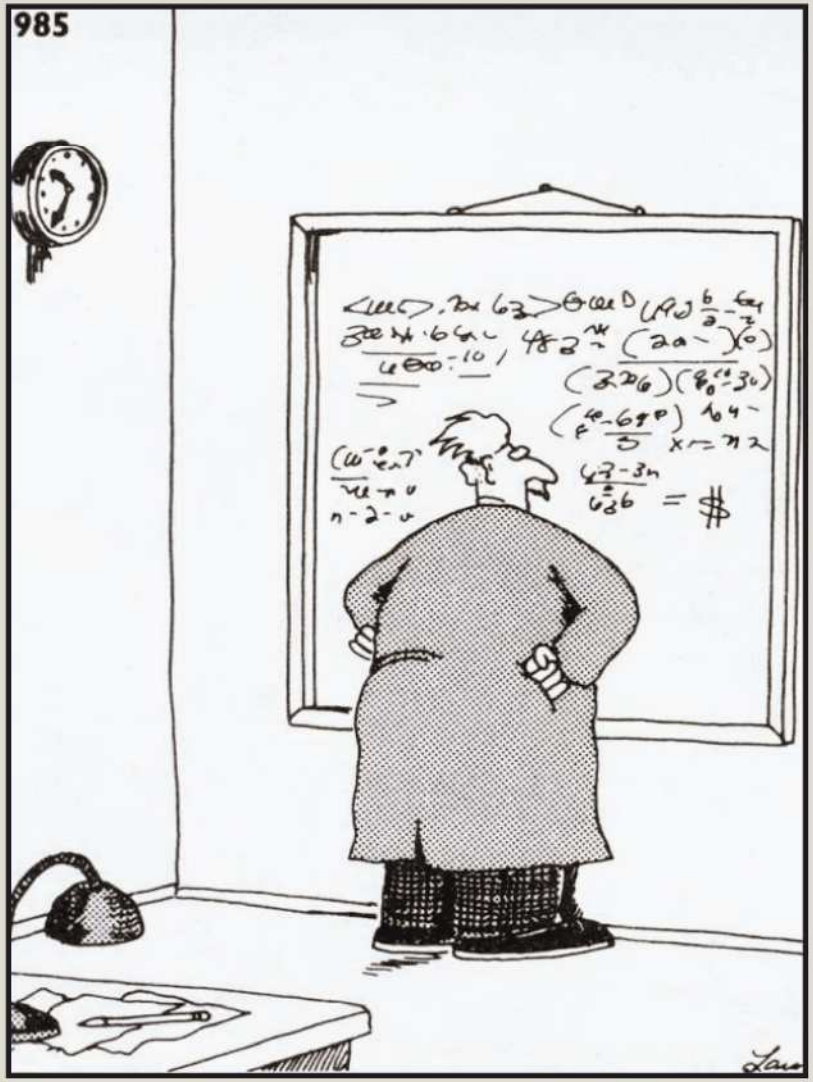
16 Tendinosis of the Kneecap

- **56% very good**
  (restitutio ad integrum)
- **28% good**
  (improvement of pain and movement)
- **9% not so good**
  (small improvement of pain and movement)
- **7% none**
  (any improvement)

Why E-SWT?

Provoking and supporting

- Pain
- Edema
- Metabolism



TIME
COST
BENEFIT

Medical Devices

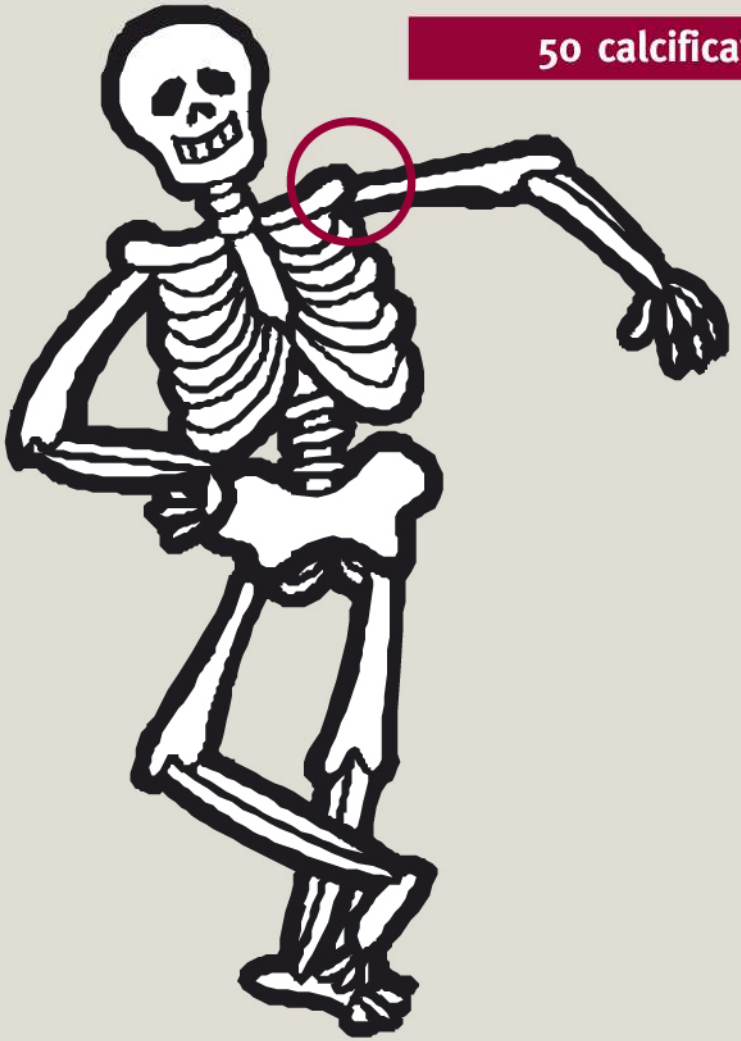
- **Which is the aim of E-SWT?**
  - Supporting recovery
  - Stopping, reducing pain
  - Preparing to further treatments
- **Scientific evidences**
- **Indications & Contraindications**
- **Knowledge and experience**
- **Costs, Benefits, Suitability**

PATIENTS

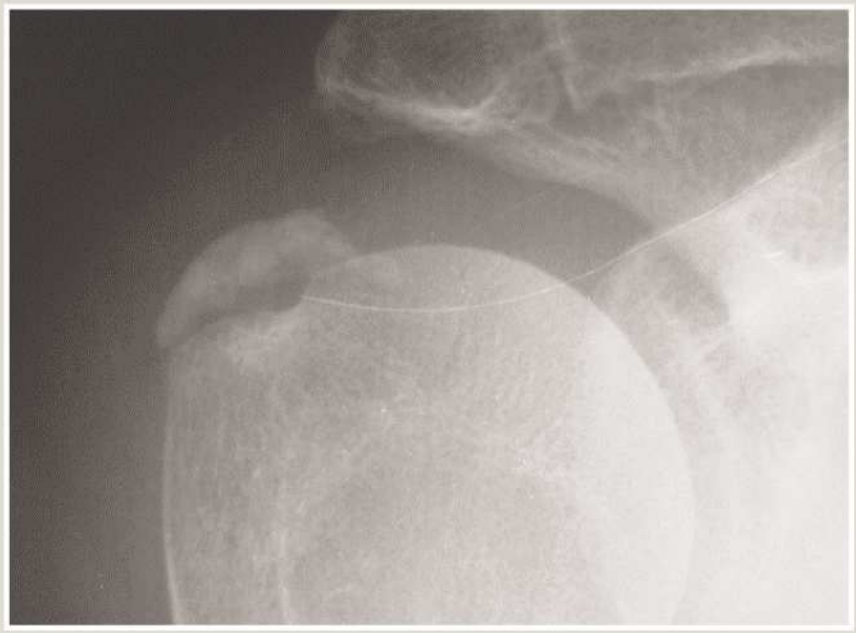
224 (23 bilateral)

247 applications

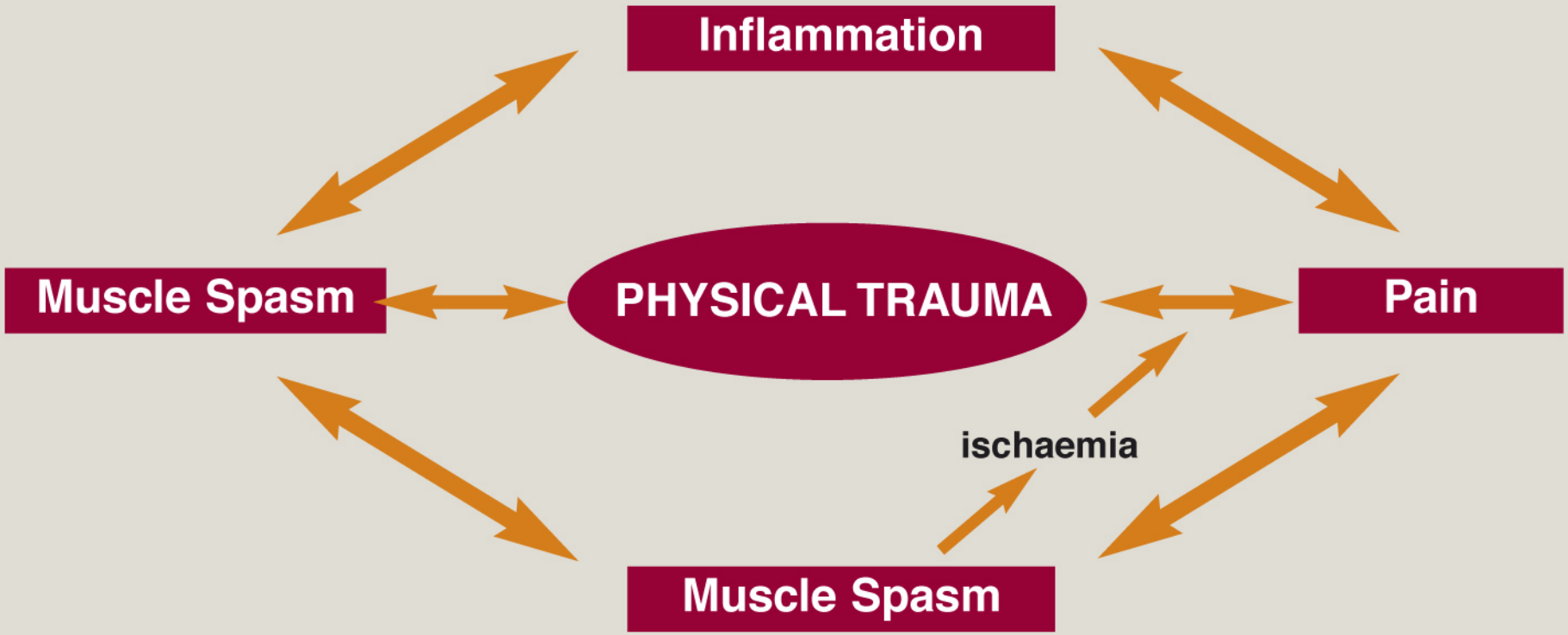
131° 93°



...concerning Duplay...



Pain



Weisberg, J. (1994). Pain. In B. Hecox, T. A. Mehreteab, & J. Weisberg, (Eds.), Physical agents (pp. 37-48). Norwalk, CN: Appleton & Lange.

Response to the Trauma

- 3 Steps:
  - Acute inflammation
  - proliferation
  - Maturity
- The a/m steps will be mixed during the response to the trauma

Response to Acute Inflammation

- Reaction of the organism to the damaged or death of cells
- aim: checking and containing effects of noxa and re-making of homeostatic equilibrium
- response is made at the following two levels:
  - Flow changes of local micro-circle
  - Changes into the cellular functioning

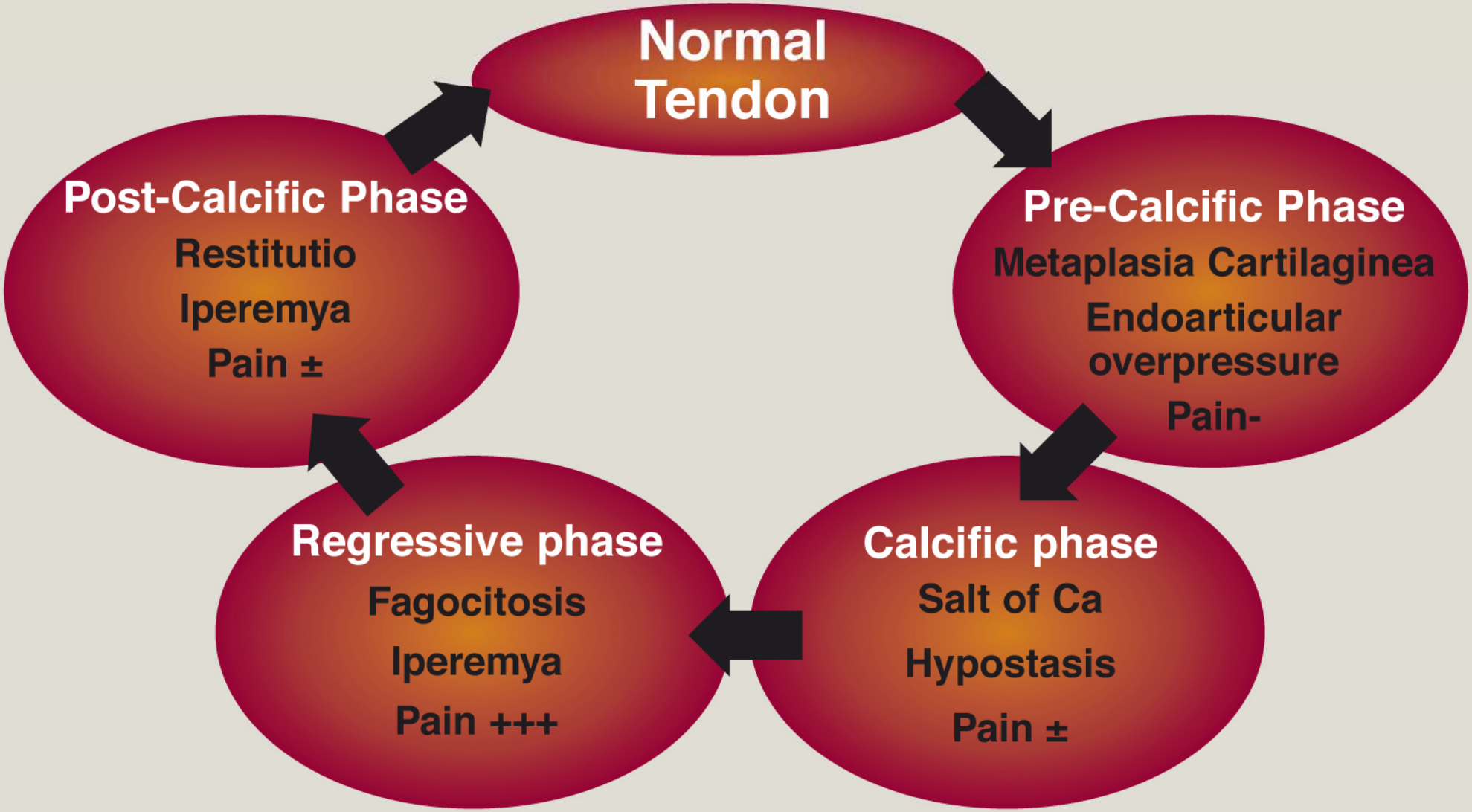
Inflammation is a useful process!!

Response to Inflammation

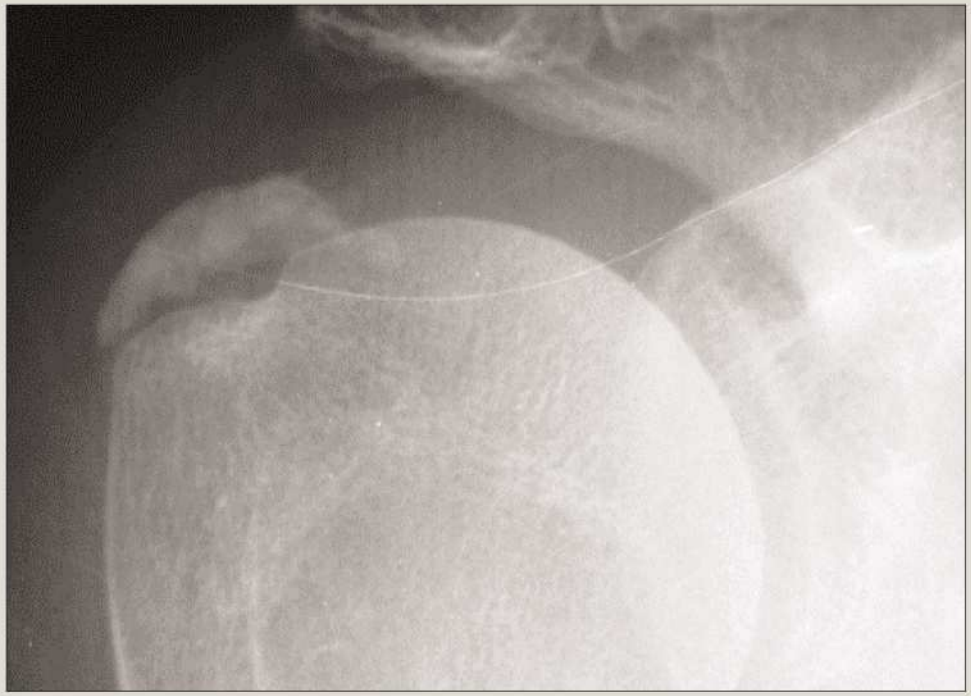
- Inflammation process could be:
  - Acute inflammation
  - Starting reaction to a trauma
- Sub-acute inflammation
  - from 2 weeks to 1 month post trauma
- Chronic inflammation
  - Persisting condition longer than 1 month

Calcific tendinitis

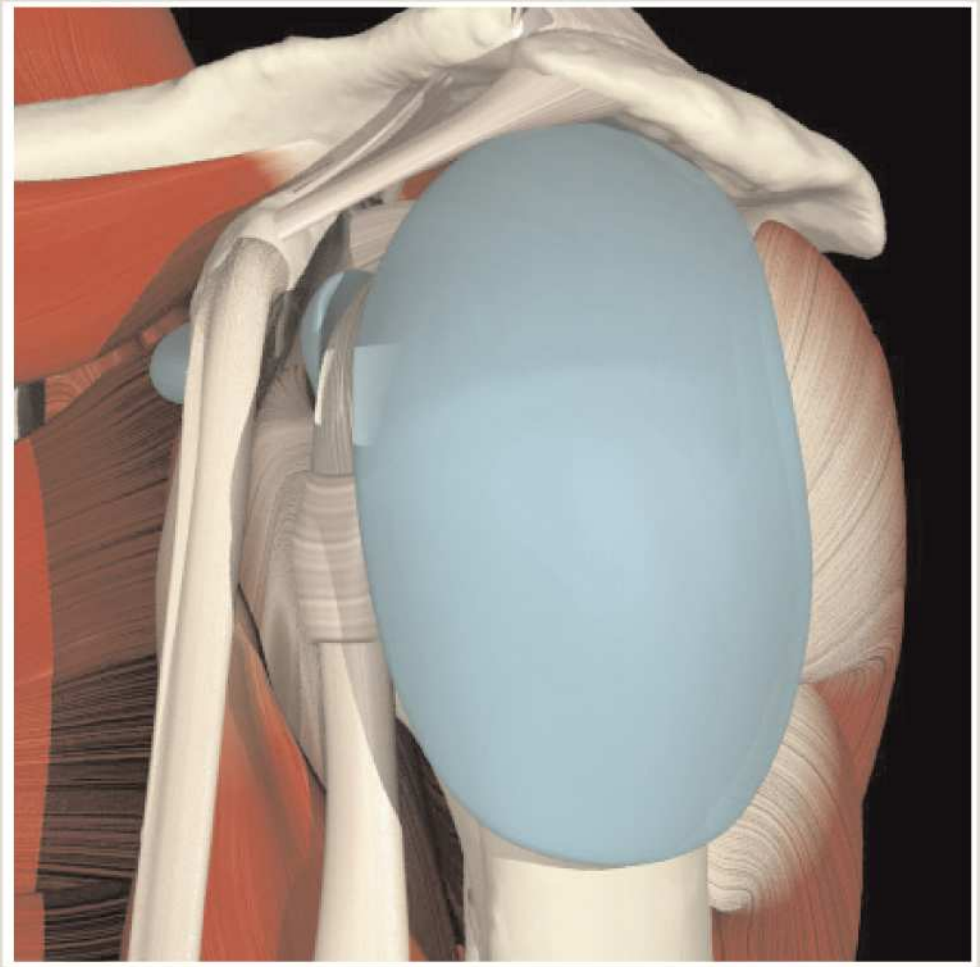
Uthoff e Sarkar, 1990



...does calcification make pain... ?

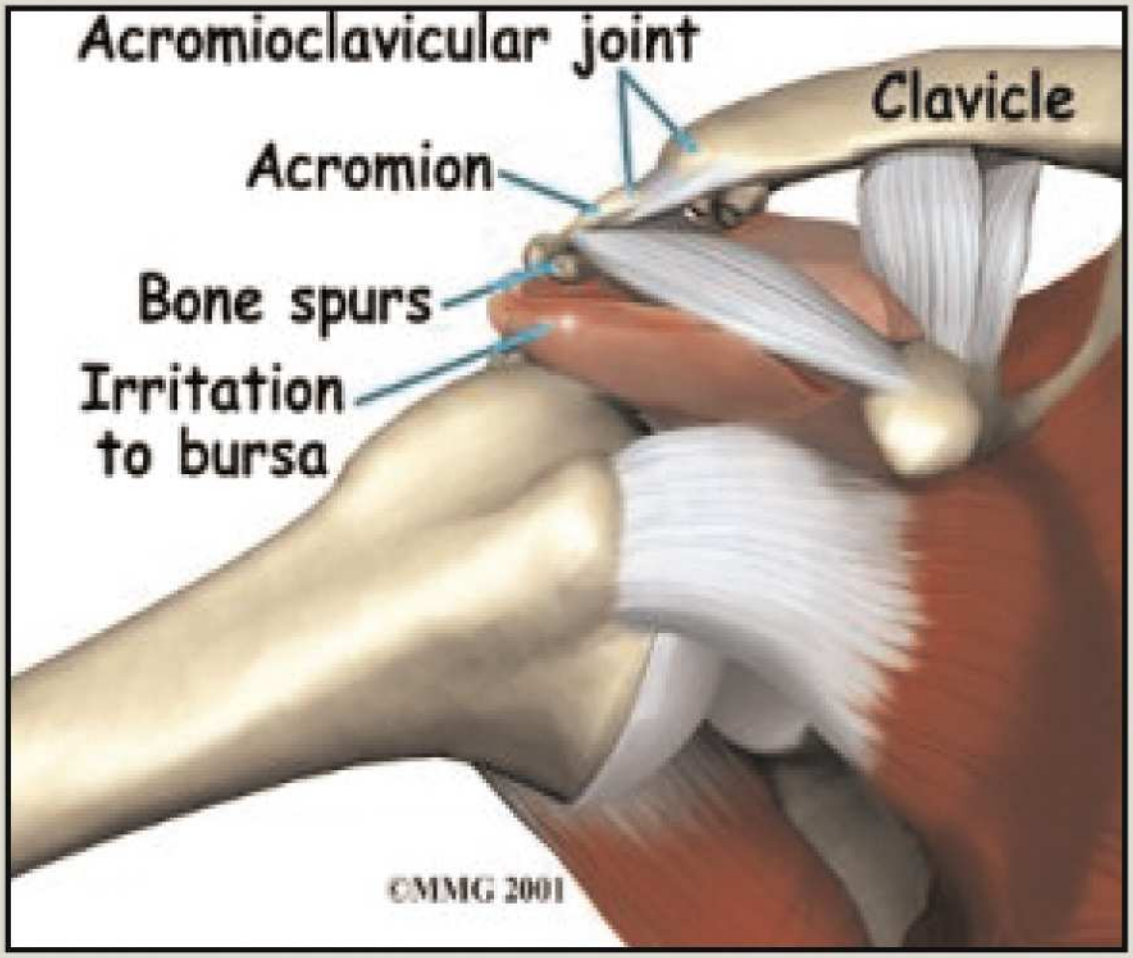


Lower Acromion Space

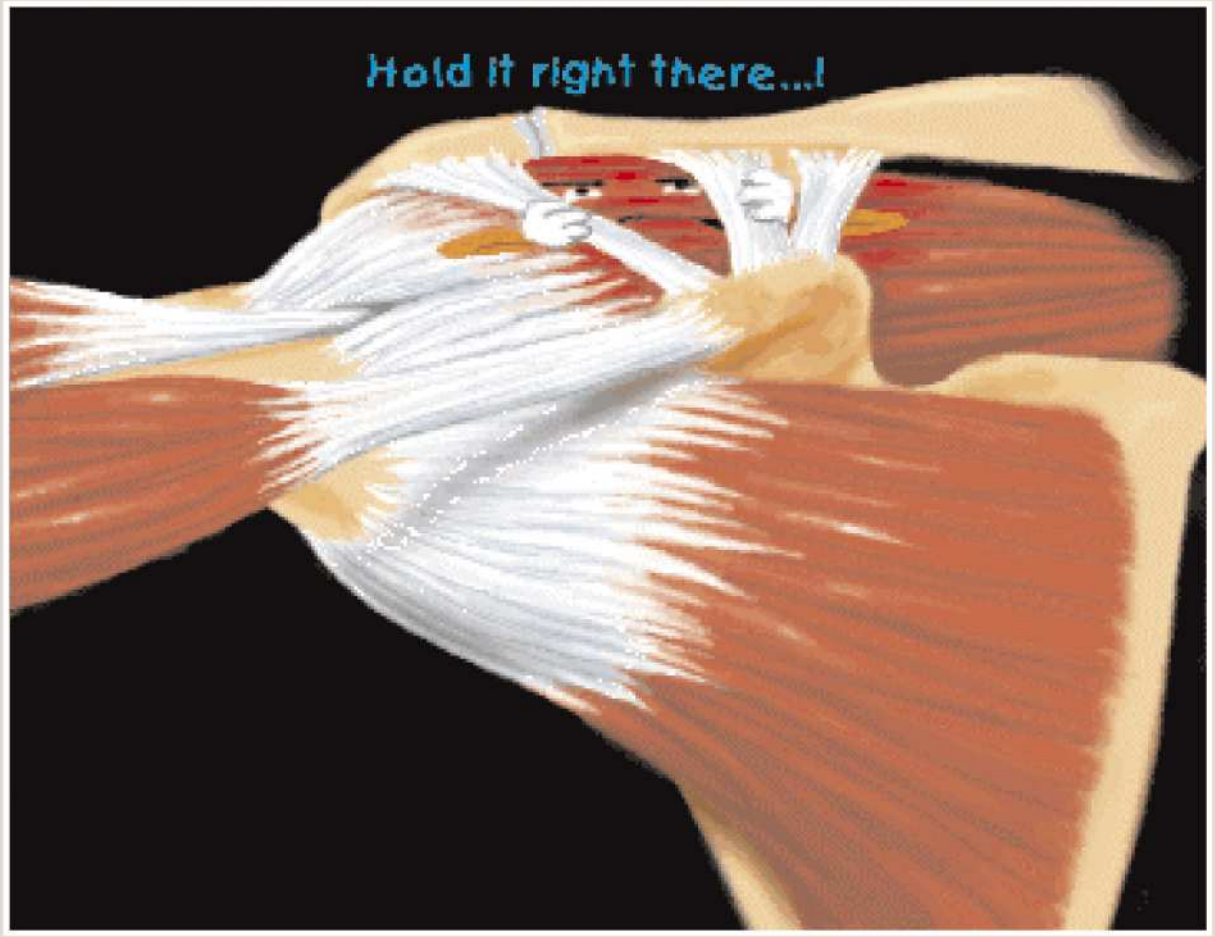


**... it's into the decreasing
of the space of shifting where we can find
the "primum movens" of impingement
and the initial suffering of the cuff...**

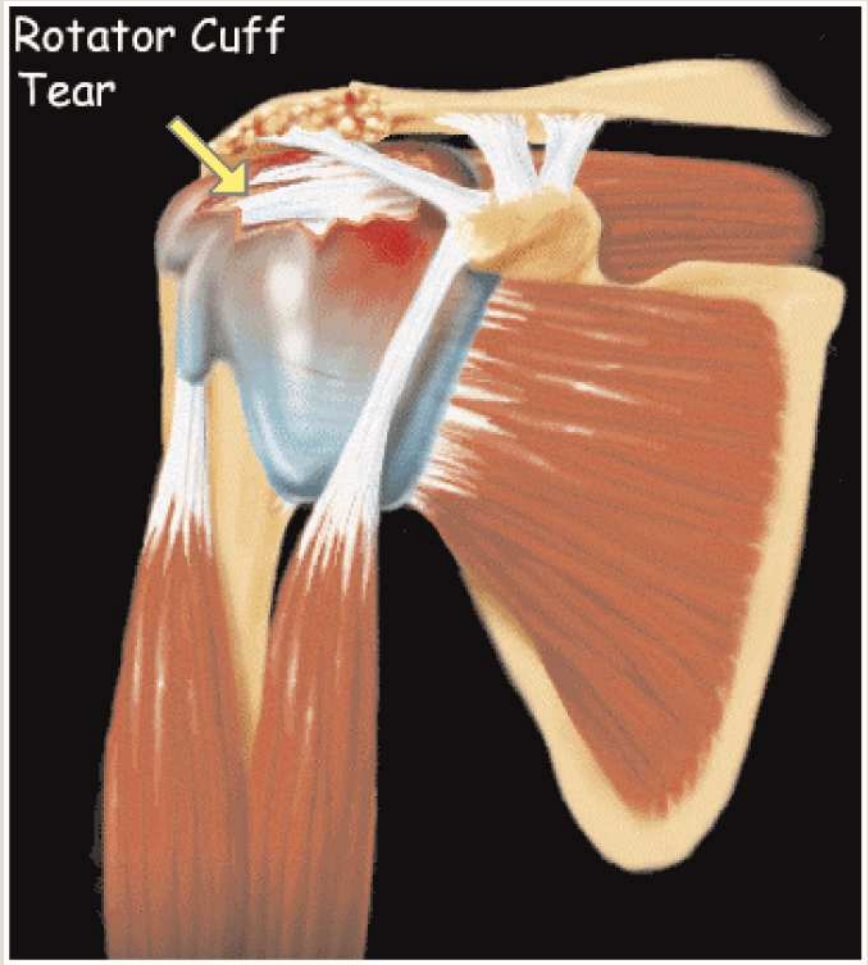
Borsitis

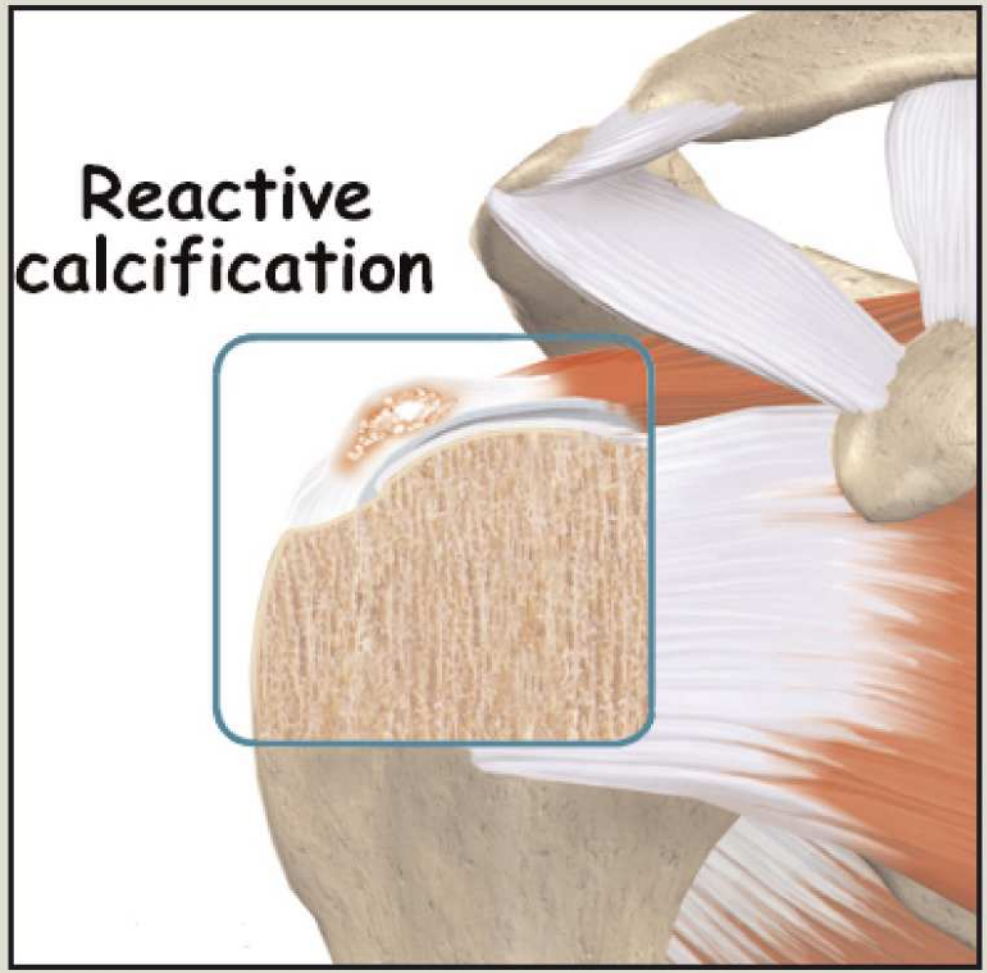

Acromioclavicular joint
Clavicle
Acromion
Bone spurs
Irritation to bursa
©MMG 2001

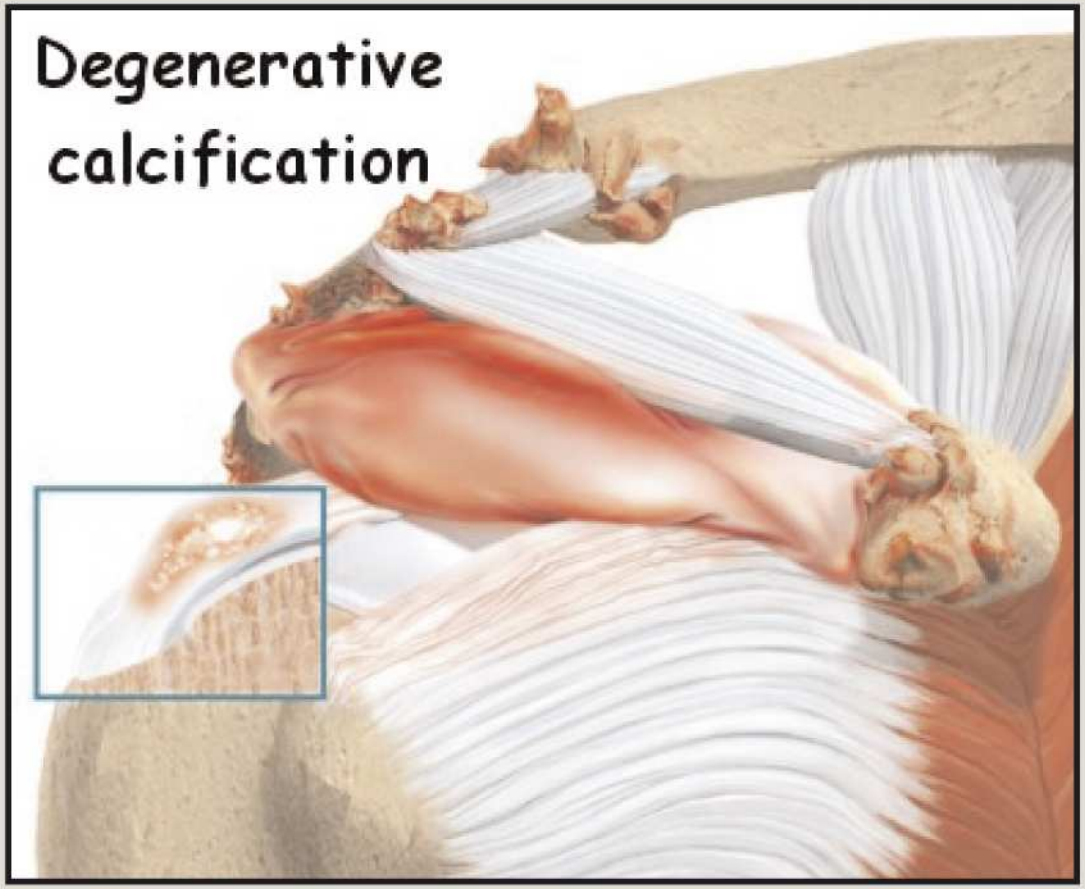
Impingement



Rotator Cuff

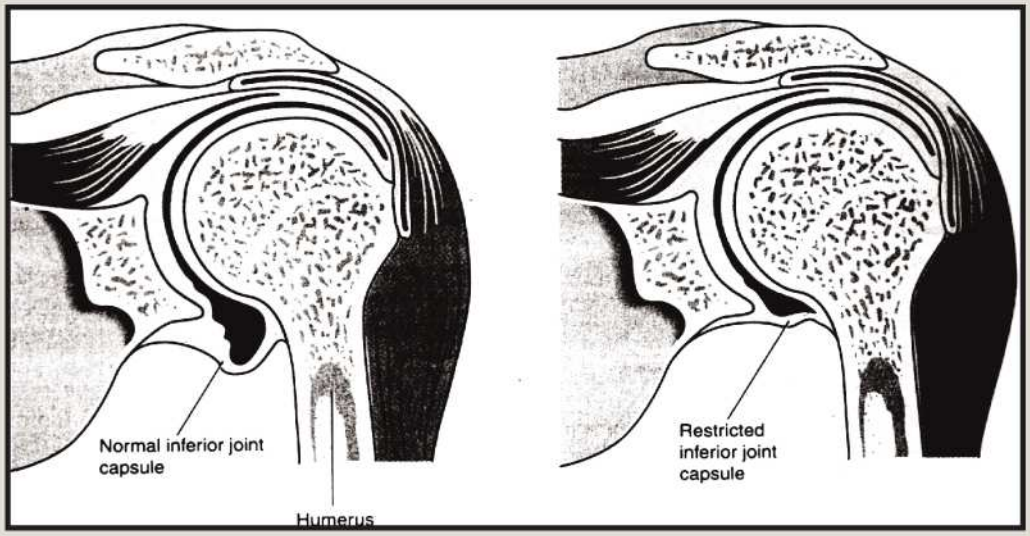



Reactive
calcification


Degenerative
calcification

Fibrosis and Capsular Adherence

- Generally due to a combination of:
  - solving of acute inflammation process
  - chronic evolution of an inflammation process of low degree
  - joint immobilization



Also on those pathologies actions shock waves are as follows:

- **Mechanical effect:** demolition of molecular organisation of calcifications

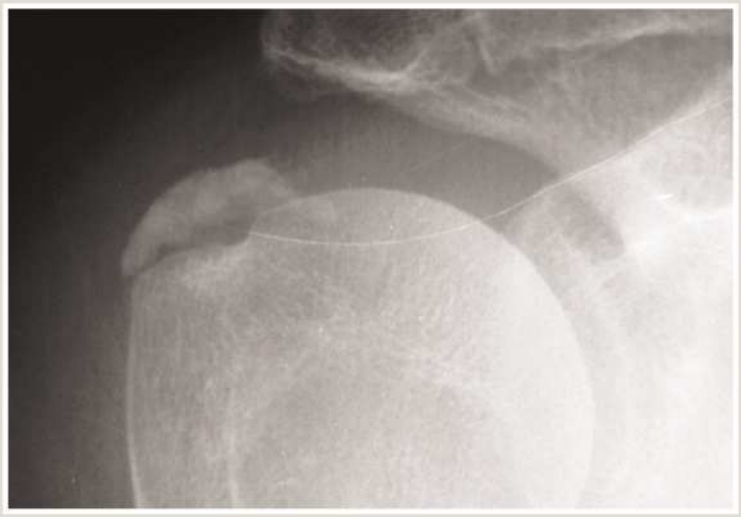
- **Biological effect:** stimulation and macro-phagic activation

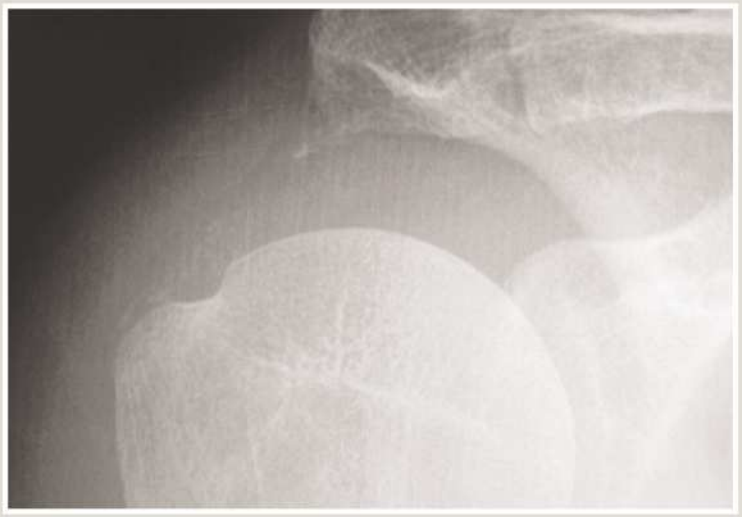
50 Calcifications of shoulder

50 Calcifications of shoulder

- **83% very good**
  (restitutio ad integrum)
- **9% good**
  (improvement of pain and movement)
- **5% not so good**
  (small improvement of pain and movement)
- **3% none**
  (any improvement of pain and movement)

Bursitis Lower Acromion



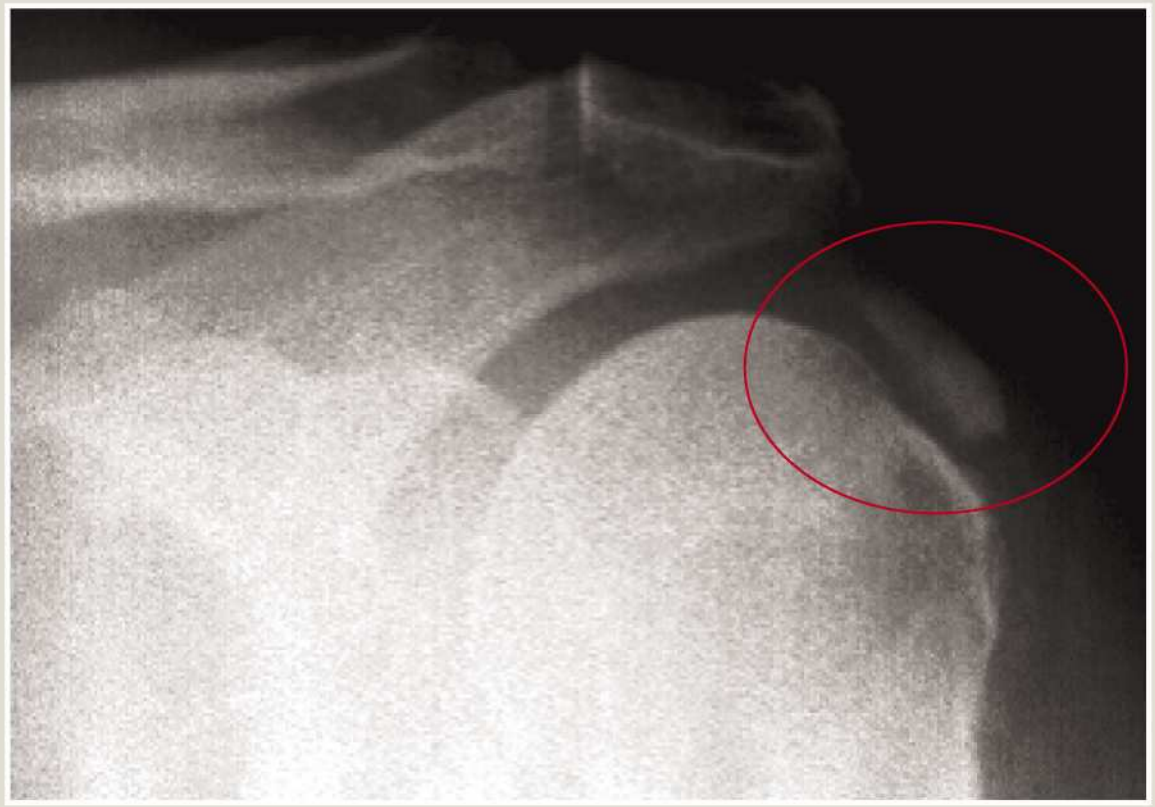


Calcific Tendinosis Upper Spinous

Bursitis Lower Deltoid

...STILL CONCERNING CALCIFICATION...

...calcification could disappear even if clinical recovery is not so good and also a good recovery could happens even if the calcification or a part of it is still present...



It is advisable to evaluate the activity of physical therapy (when it is possible) in order to support joint's recovery
and tendon functionality.

Rehabilitation

Fast immobilization without pain

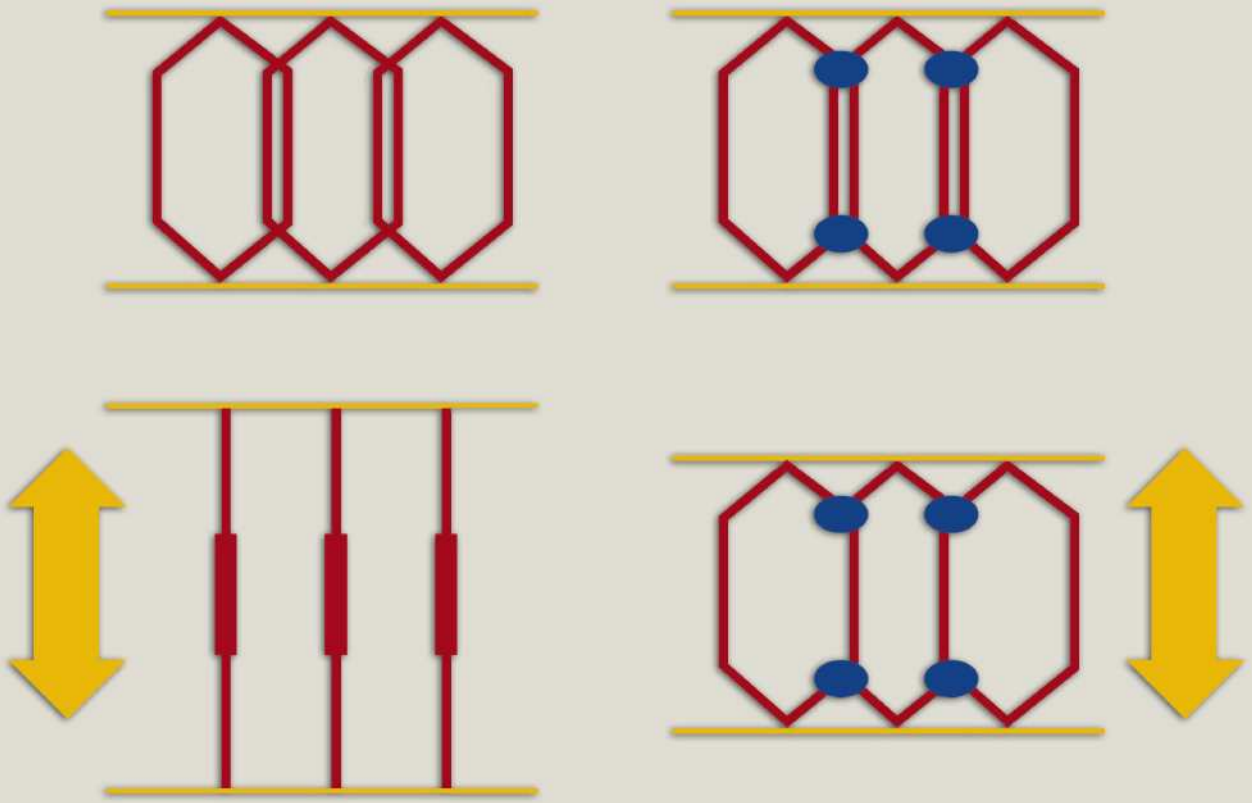
- Stabilization of scapular region
- Activity under kinetic closed chain
- Activity of whole kinetic chain

“Cross-links” over collagenous fibers

IMMOBILIZATION

Changed by Akeson et al, Biorheology 1980

“Cross Link” effects



Changed byificata da Akeson et al, Biorheology 1980

Effect of the immobilization over the capsular region

A) acute phase

- techniques for reducing pain
- Application of a low force for making easier the alignment of collagen over the stress line

Effect of the immobilization over the capsular region

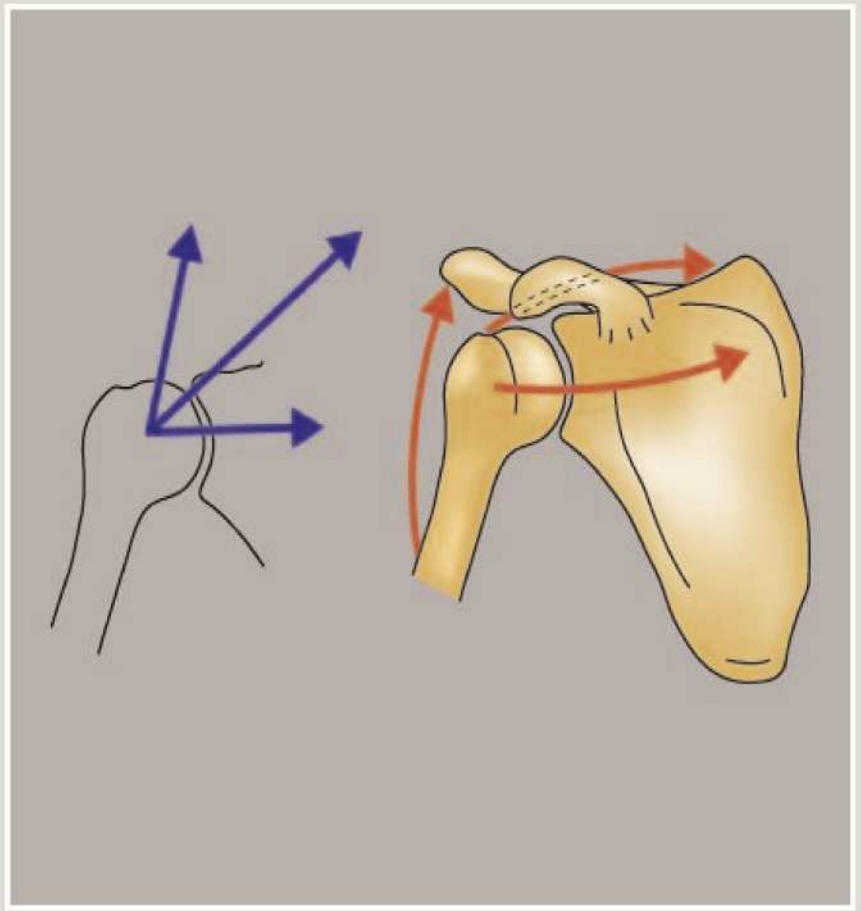
B) sub-acute phase

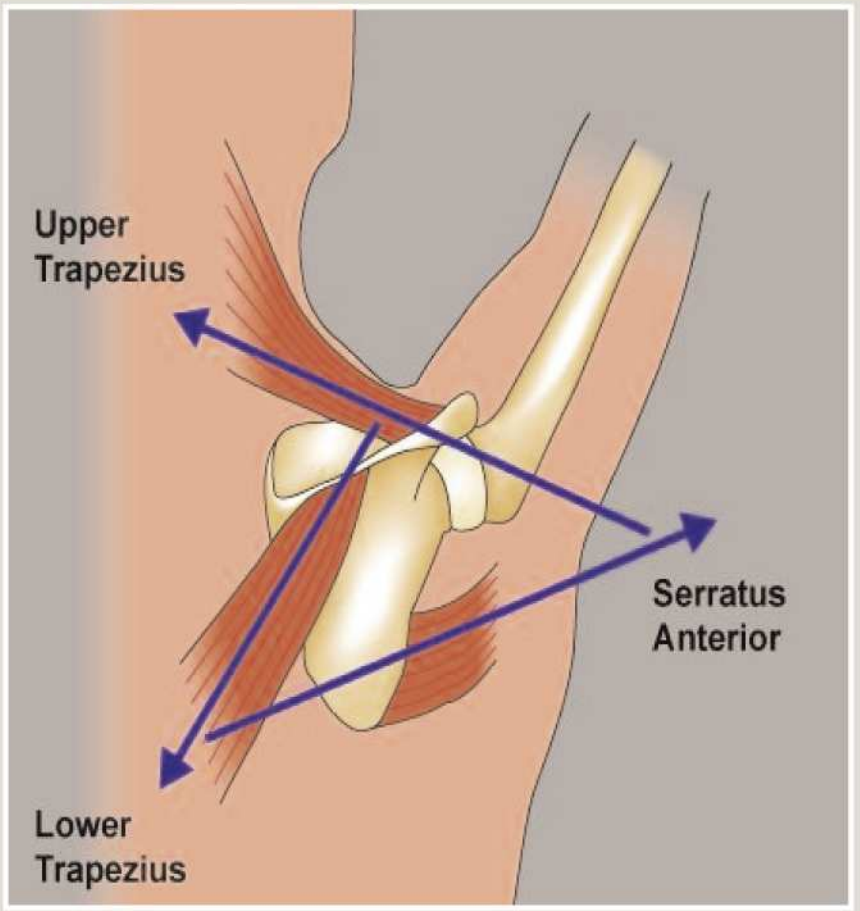
- techniques useful to support stimulation of collagen over the stress lines
- application of a“gradual stress”

Effect of the immobilization over the capsular region

C) into the transaction/consolidation

- immobilization techniques provoke few effects over the tissue
- recovery starts far from the capsular region
- support recovery




Upper
Trapezius
Serratus
Anterior
Lower
Trapezius

Very good benefits have been got into the Sport Medicine:

- Improvement of the compliance
- Reducing of time recovery
- Faster starting of sport activity
  “same sport same level”

With reference to the experience we made, it should be useful if shock-wave therapy will be officially introduced into the Physical Therapy Medicine, becoming a therapeutic modality of reference.

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